SBC-596/599

Pentium MMX, K6 Full-size CPU Card with LCD, Ethernet, SCSI & High Drive

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Dear Customer:

We are notifying you that SBC-596/599 has some compatibility issues with some Seagate hard disk drives.
Owing to some limitations with the Seagate controller's specifications, we found the Intel 430TX chipset cannot work with some Seagate hard disk drives. Seagate promises to solve this issue in the new controller. Please check with Seagate for further information. We recommend users who plan to use the following Seagate hard disk drives models with the SBC-596/599 check with Seagate regarding the availability of a new controller:

ST31277A	1.28 GB
ST31720A	1.7 GB
ST32531AC	2.5 GB
ST33240AC	3.2 GB

June 1998

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SBC-596/599 series comparison table

Model	SBC-599	SBC-596
CPU	**Intel**: P54C, P55C (MMX) 75~200 MHz AMD: K5,K6 Cyrix: M1, M2	**Intel**: P54C, P55C (MMX) 75~200 MHz AMD: K5,K6 Cyrix: M1, M2
System Chipset	430TX	430TX
BIOS	Award, PnP	Award, PnP
L2 cache	512 KB	512 KB
Max. System RAM	256 MB EDO	256 MB EDO
VGA CRT/LCD	C&T 65550	**x**
LAN	10 BaseT, RTL8029	**x**
SCSI	16-bit	**x**
High Drive	64 mA	**x**
USB	2	2
EIDE	4	4
2S/1P		

Refer to the SBC-596/599 features directly in the following manual

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Packing list

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 SBC-596/599 CPU Card
- 1 Supporting CD-ROM
- 1 IDE cables
- 1 FDD cable
- 1 PS/2 keyboard and mouse connector
- 1 serial/ 1 parallel bracket cable
- 1 Quick Installation Guide
- 1 Ultra SCSI cable (SBC-599 only)

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

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CHAPTER 1

General Information

This chapter gives background information on the SBC-596/599.

Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

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Introduction

The SBC-596/599 is a full-size CPU card. This card uses a Pentium processor based CPU and accommodates up to 256 MB DRAM. It also provides a secondary level 512 KB cache, 2 USB(Universal Serial Bus) ports and 63-level watchdog timer with jumperless setup.

The SBC-596/599 offers power management features to minimize power consumption. It complies with the "Green Function" standard and supports three power saving features: doze, sleep, and suspended mode.

The SBC-599 provides a PCI Ultra Wide SCSI controller with max data transfer rate at 40 MB/sec. In addition, the SBC-599 is equipped with a ISA high drive at 64 mA, a C&T 65550 chipset and a 10Base-T networking controller, which makes the SBC-599 a highly reliable CPU card perfect for IPC applications or computer telephony integration application.

Features

- Pentium up to 233 MHz, P54C, P55C (MMX), Cyrix 6x86, 6x86MX AMD K5, K6 processor
- Supports DoubleSpeed SCSI operation up to 40 MB/sec
- CPU overheat protection
- Flash BIOS, easy to update
- On-board VGA CRT/LCD (SBC-599 only)
- On-board 10Base-T networking controller (SBC-599 only)
- On-board PCI Ultra Wide SCSI controller (SBC-599 only)
- 16C550 UARTs, two RS-232 ports
- Enhanced parallel port, supports SPP/EPP/ECP
- PS/2 mouse interface
- USB interface
- ISA High drive 64mA (SBC-599 only)
- 63-level watchdog timer, jumperless setup
- Power management green function supported, APM 1.1 compliant

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Specifications

Standard PC system

- **CPU:**
  Intel Pentium up to 233 MHz, P54C, P55C(MMX)
  AMD K5, K6
  Cyrix 6x86, Cyrix 6x86MX

- **BIOS:** AWARD Flash BIOS, supports plug & play
- **Chipset:** Intel 430TX
- **Secondary level cache:** 512 KB on board
- **Green function:** Supports power management option via BIOS, activated by keyboard or mouse activity. Supports doze, sleep, and suspended mode. APM 1.1 compliant
- **RAM:** 8 MB to 256 MB, four 72-pin SIMM socket, accepts 4, 8, 16, 32 and 64 MB SIMMs. Compatible with both EDO and FDM memory
- **EIDE interface:** Supports up to four IDE devices and the Ultra DMA/33 bus
- **Floppy disk drive interface:** Supports up to two floppy disk drives, 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB)
- **Parallel port:** One enhanced parallel port, supports SPP/EPP/ECP parallel mode
- **Serial ports:**16C550 UARTs, Two RS-232 ports
- **USB interface:** two USB connectors with fuse protection. Complies with USB Spec. Rev.1.0
- **Watchdog timer:** 63-level timer interval, jumperless with runtime setup, generates system reset or IRQ11
- **Keyboard/Mouse connector:** A 6-pin mini DIN connector is located on the mounting bracket for easy connection of a keyboard or a PS/2 mouse. An on-board keyboard 5-pin male keyboard header connector is also available.
- **ISA driver current:** 16 mA (Normal), 64mA (High Drive, SBC-599 only)

VGA interface **(SBC-599 only)**

- **Controller:** C&T 65550 VGA controller with Windows accelerator
- **Display memory:** 1MB on-board DRAM, up to 2MB (optional)
- **VGA CRT/LCD Display resolution:**

- Non-interlaced CRT monitor resolution up to 1024x768 @ 256 colors

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- Panel resolution: Supports 640 x 480 @ 16M colors, up to 800 x 600 TFT panel
- Display output: DB-15 VGA connector, 44 pin header general purpose flat panel display connector

SCSI interface: (SBC-599 only)

- **PCI SCSI:** Supports Ultra Wide SCSI 8-bit or 16-bit interface. Supports DoubleSpeed SCSI operation up to 40 MB/s
- **Chipset**: Adaptec AIC-7880

LAN: (SBC-599 only)

Supports 10 BaseT Ethernet networking

- Controller: Realtek RTL8029 chipset
- Type: 16bits Novell NE2000 compatible
- Connector: 10 BaseT connector

Mechanical and environmental

- **Power supply:** 3.5 A @+5 V
- **Operating temperature:** 0 to 60° C (32 to 140° F)
- **Board size:** 338mm x 122mm

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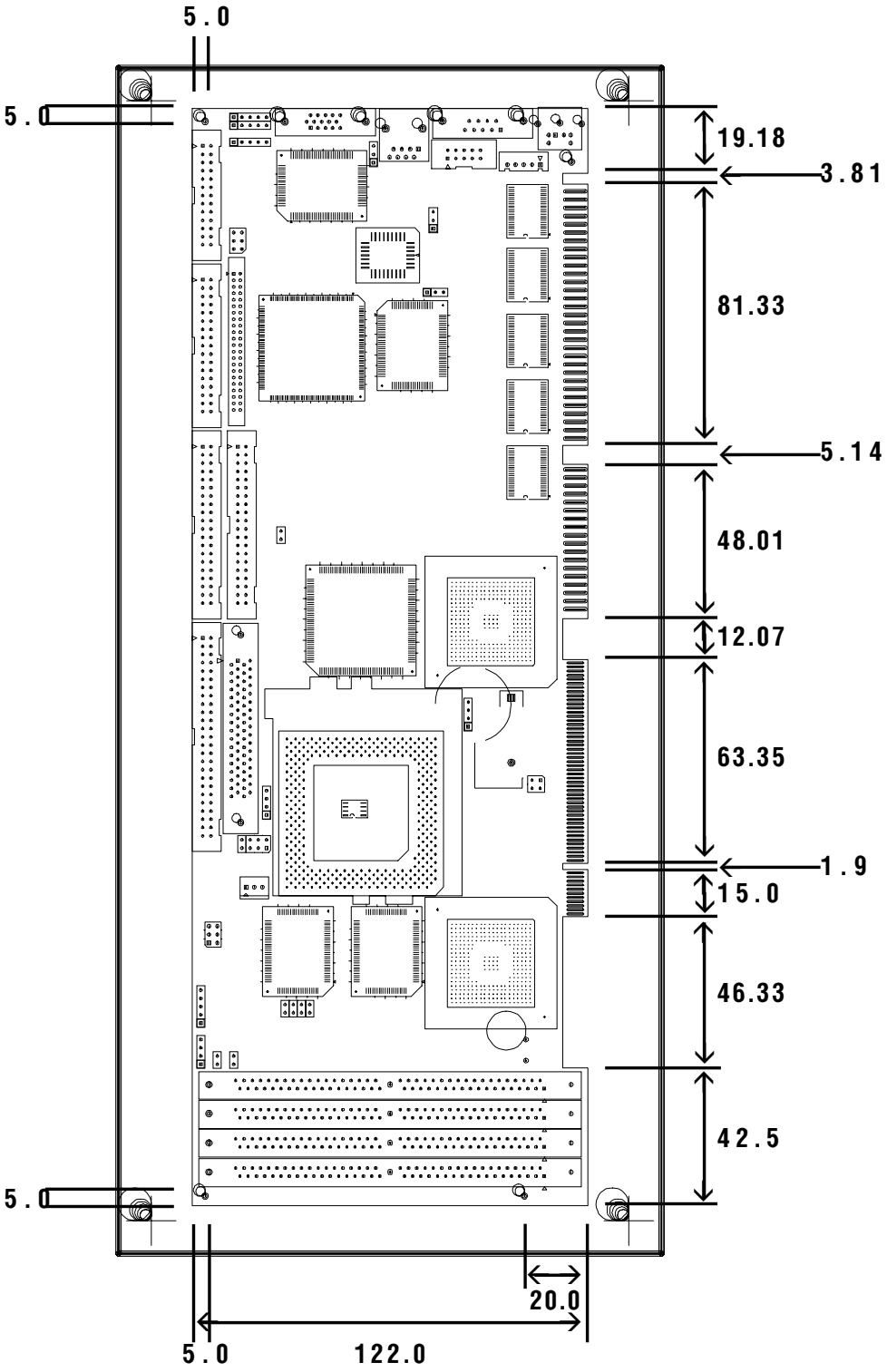
Board layout and dimensions



Dimensions in mm

SBC-596/599 dimensions

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CHAPTER 2

Installation Guide

This Installation Guide tells how to set up the SBC-596/599 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

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Jumpers

The SBC-596/599 has a number of jumpers that allow you to configure your system to suit your applications. The table below lists the function of each of the board's jumpers.

Jumpers

Label	Function
J1	Voltage Select
J2	Voltage Select
J3	Voltage Select
J4	Voltage Select
J5	Frequency Ratio
J7	MTXC CLK Setting/P55C Enabled
J8	Clock Setting
J9	Battery Select and Clear CMOS
J10	SCSI Select
J11	ISA Timing
J12	LCD Power Select
J13	LCD/EL Select
J14	Watchdog Select
J15	Dual Power Select

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Connectors

Onboard connectors link the SBC-596/599 to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors.

Connectors

Label	Function
CN1	Speaker CON.
CN2	HDD LED CON.
CN3	Reset switch
CN4	Power LED/keyboard Lock CON.
CN5	Fan Power CON.
CN6	Wide SCSI CON.
CN7	SCSI CON.
CN8	Primary IDE CON.
CN9	Secondary IDE CON.
CN10	Floppy CON.
CN11	Flat Panel CON.
CN12	EXT Keyboard CON.
CN13	COM2
CN14	Printer Port CON.
CN15	IR CON.
CN16	CRT CON.
CN17	COM1
CN18	USB2
CN19	PS/2 Mouse & Keyboard CON.
CN20	USB1
UTP1	Ethernet CON.

Please refer to Appendix B for pin assignment.

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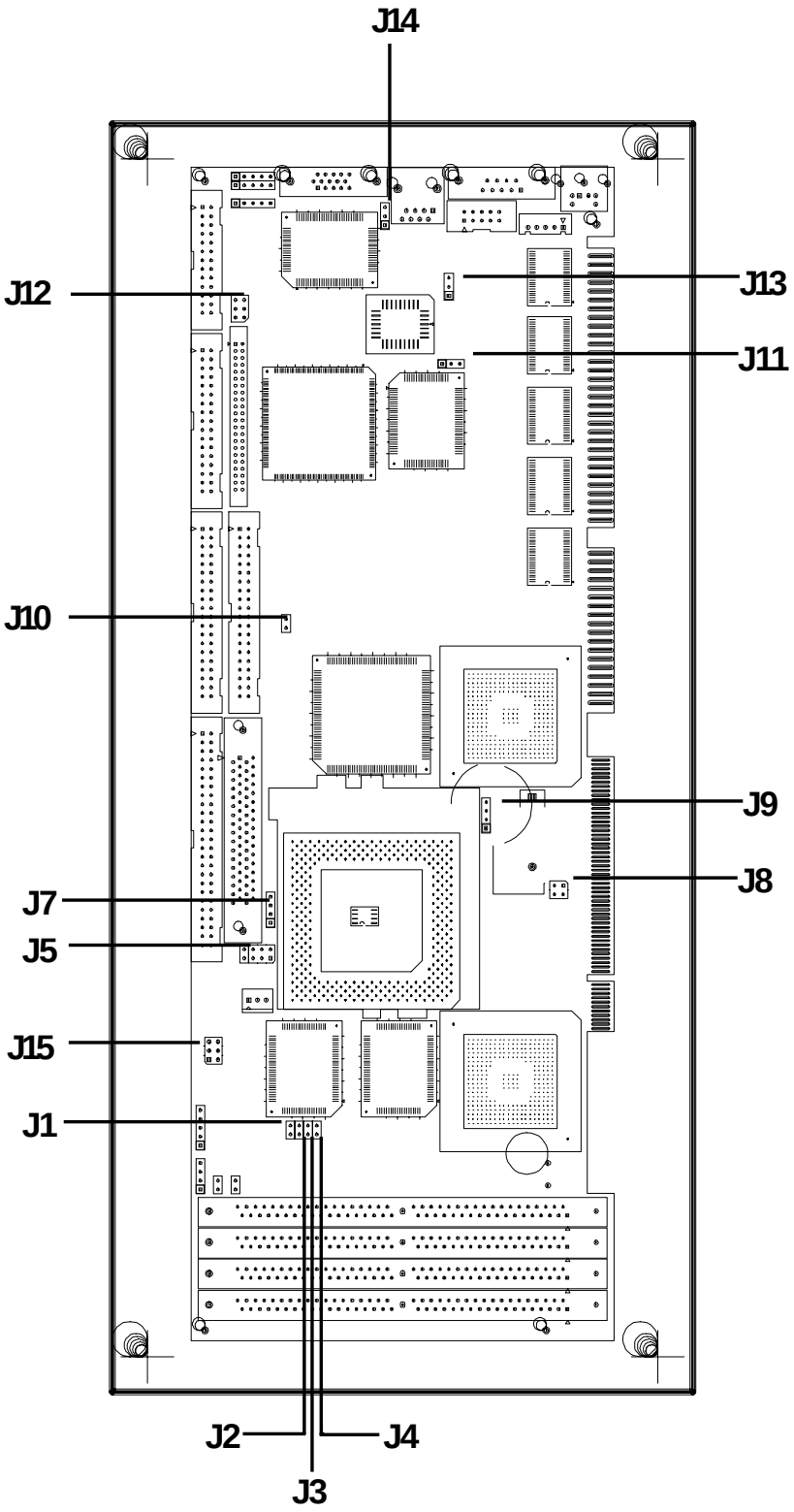
Locating jumpers



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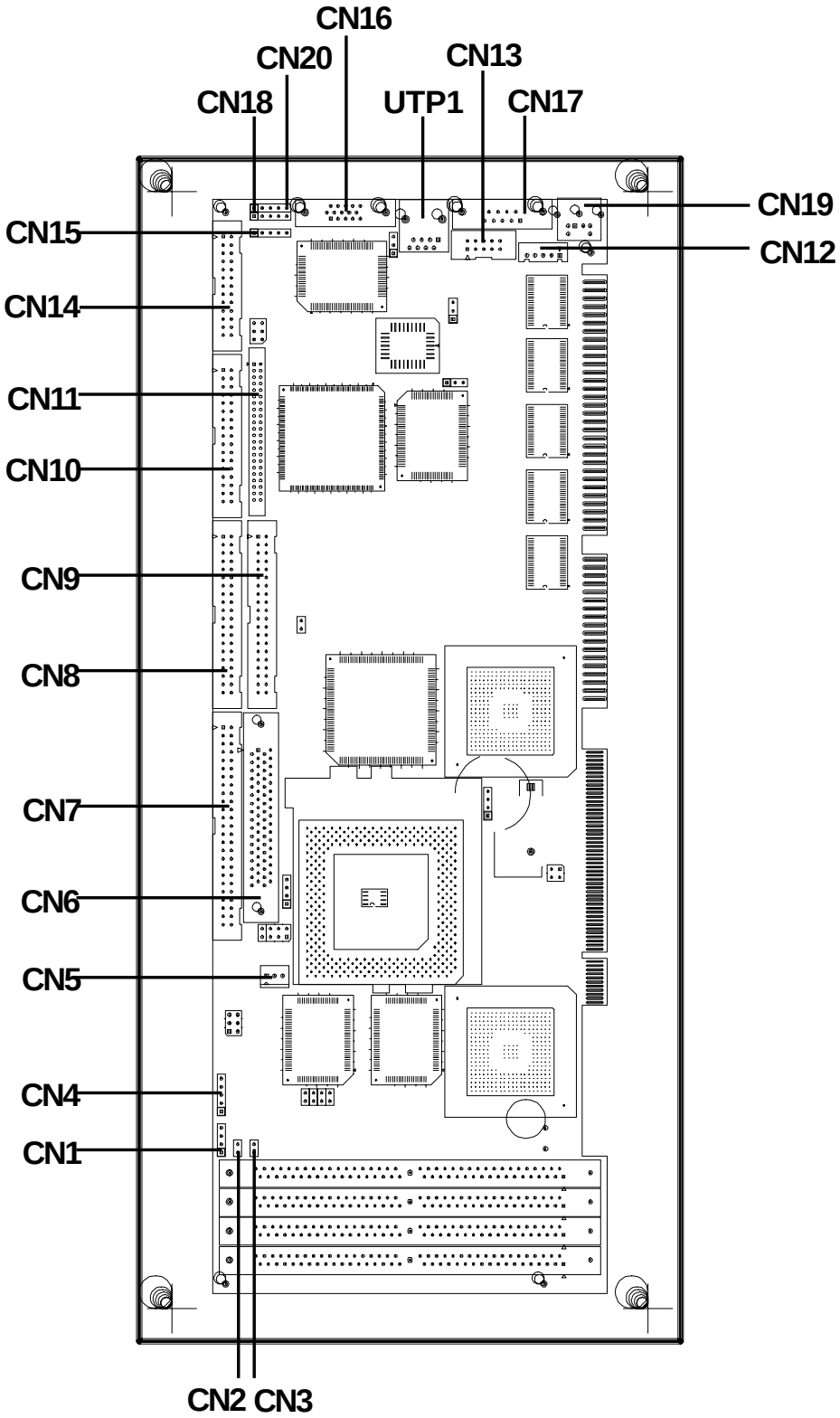
Locating connectors



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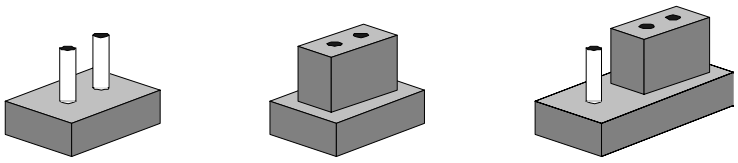
Setting jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



The jumper sesttings are schematically depicted in this manuaal as follows:

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

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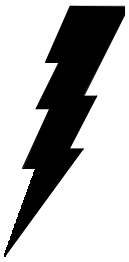
CPU installation and upgrading

You can upgrade to a higher power Pentium processor at any time. Simply remove the old CPU, install the new one, and set the jumpers for the new CPU type and speed.

Warning!



Always disconnect the power cord from your chassis when you are working on it. Do not make connections while the power is on as sensitive electronic components can be damaged by the sudden rush of power. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the PC board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.

Install a CPU in the ZIF socket

SBC-599 Series provides a Zero Insertion Force (ZIF) socket for easy CPU installation.

1. Make sure the ZIF socket lever is in the upright position. To raise the lever, pull it out to the side a little and raise it as far as it will go.
2. Place the CPU in the empty socket. Follow the instructions that came with the CPU. If you have no instructions, do the following: Carefully align the CPU so it is parallel to the socket and the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Gently slide the CPU in. It should insert easily. If it doesn't, pull the lever up a little more.

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3. Press the lever down. The plate will slide forward. You will feel some resistance as the pressure starts to secure the CPU in the socket. This is normal and won't damage the CPU.

When the CPU is installed, the lever should snap into place at the side of the socket.

NOTE: To remove a CPU, pull the lever out to the side a little and raise it as far as it will go. Lift out the CPU chip.

When you install a new CPU, be sure to adjust the board settings, such as CPU type and CPU clock. **Improper settings may damage the CPU.**

Voltage Select (J1, J2, J3, and J4)

J1, J2, J3, and J4 must be set to match the CPU type. The chart below shows the proper jumper settings for their respective V_{cc} (core). (The V_{cc} (I/O) for CPU is fixed to be 3.3V).

V	2	2.1	2.2	2.4	2.5	2.6	2.7	2.8*	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6
J1	open	close	open	close	open	close	open	close	open	close	open	close	open	close	open	close
J2	open	open	close	close	open	open	close	close	open	open	close	close	open	open	close	close
J3	open	open	open	open	close	close	close	close	open	open	open	open	close	close	close	close
J4	open	open	open	open	open	open	open	open	close	close	close	close	close	close	close	close

*** default setting**

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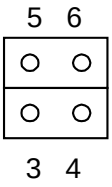
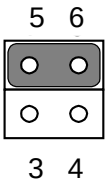
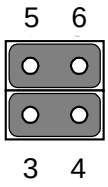
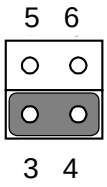
Frequency Ratio (J5)

This jumper sets the frequency ratio between the internal frequency of the CPU and the BUS Clock. If you use an AMD K6 CPU, please refer to J5 frequency ratio for K6 only.

J5 Frequency Ratio**

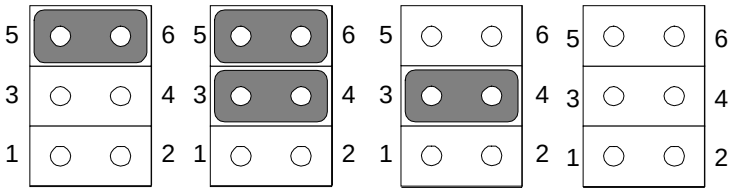
F.R.	1.5***	2	2.5*	3
J5				

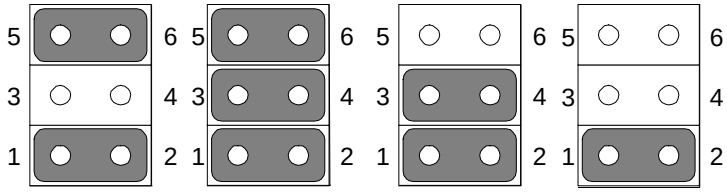
* Default setting

** Jumper settings for pins 1 and 2 do not affect this setting

*** For Intel 233 MHz MMX CPUs, F.R. is 3.5 for this setting

J5 Frequency Ratio for K6 only

F.R.	2	2.5	3	3.5
J5				

F.R.	4	4.5	5	5.5
J5				

Please refet to the following table for CPU internal frequency (MHz) settings (for reference only).

CPU Internal Frequency	100	120	133	150	166	200	233	266	300	333	366
F.R.	1.5	2	2	2.5	2.5	3	3.5	4	4.5	5	5.5
Clock	66	60	66	60	66	66	66	66	66	66	66

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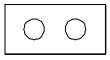
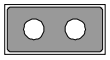
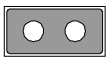
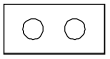
MTXC CLK Setting/P55C Enabled (J7)

This jumper setting provides Intel MTXC chipset 66/60 MHz frequency. You can Enable/Disable P55C CPUs with pin 1 and pin 2 close/open.

J7 MTXC CLK Setting

	66 Hz*	60 Hz
J7		
	3 4	3 4

J7 P55C Enabled/Disabled

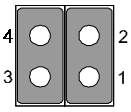
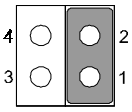
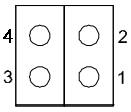
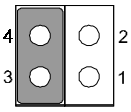
	Enabled*	Disabled
J7		
	1 2	1 2

* default setting

Clock Setting (J8)

J8 must be set together with J5 jumper to match the CPU internal frequency. The clock frequency times the Frequency Ratio equals the CPU's internal frequency.

J8 Clock Setting

CPU	55	60	66*	75
PCI	27.5	30	33.3	37.5
J8				

* default setting

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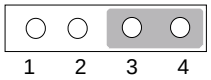
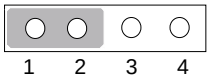
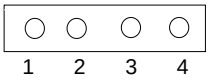
Battery Select and Clear CMOS (J9)

This jumper sets the CMOS data retention power supply by internal battery, external battery, or clear CMOS.

J9 Battery Select

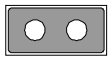
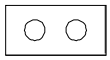
	Internal Battery*	External Battery	Clear CMOS
J9			

* default setting

SCSI Select (J10) (SBC-599 only)

This jumper sets the data transfered by SCSI to 16-bit (Wide SCSI enabled) or 8-bit (Wide SCSI disabled).

J10 SCSI Select

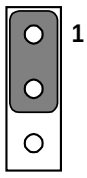
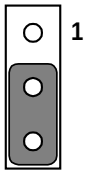
	Wide SCSI Enabled*	Wide SCSI Disabled
J10		

* default setting

ISA Timing (J11) (SBC-599 only)

For high-drive ISA bus systems, in order to increase system stability, you may delay the ISA timing for 1 or 2 clock pulses. However, it will decrease system performance.

J11 ISA Timing

	1 wait delay*	2 wait delay
J11		

* default setting

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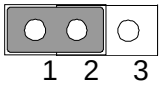
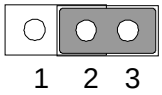
LCD/EL Select (J13)

This jumper sets the display type for the CPU card.

J13 LCD/EL Select

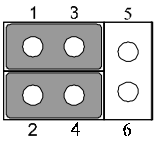
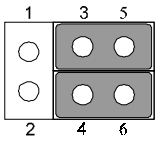
	EL	LCD*
J13		

* default setting

Dual Power Select (J15)

This jumper sets single power/dual power CPU type. Current Intel CPUs marked “Pentium” have only a single power plane and those marked “Pentium with MMX” have dual power planes.

J15 Dual Power Select

	Single power CPUs	Dual power CPUs*
J15		

* default setting

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Installing DRAM (SIMMs)

The SBC-599 CPU card provides four 72-pin SIMM (Single In-line Memory Module) sockets and supports either Fast Page Mode (FPM) or Extended Data Output (EDO) DRAM with a speed of 70 ns or faster. You can install up to 256 MB of RAM.

Installing SIMMs

NOTE 1: Pentium or compatible processors adopt 64 bit data bus. Since 72-pin SIMM can only provide 32 bit data bus width, two SIMM modules are required as one memory bank, and both SIMMs must be the same size and type.

1. Ensure that all power sources are disconnected.
2. Slip the memory module into the socket at a 45 degree angle.
3. Push the module toward the vertical posts at both ends of the socket until the module is upright and the retaining clips at both ends of the module click into place. When positioned correctly, the pins on top of the vertical posts should correspond to the circular holes on the ends of the module.
4. Repeat steps 2 and 3 for each module you install.

NOTE 2: Do not insert any SIMM module that contains more than 24 memory chips. SIMMs contain more than 24 chips exceed the driving capability of new generation chipsets.

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Front panel connectors (CN1,CN2,CN3,CN4)

You may want to install external switches to monitor and control the SBC-596/599. These features are optional —install them only if you need them. The front panel connectors include a speaker connector (CN1), a HDD LED connector (CN2), an input switch (CN3) for resetting the card, and a keyboard lock connector (CN4).

Speaker connector (CN1)

The SBC-596/599 can drive an 8 W speaker at 0.5 watts. Ensure that alternatives to this specification do not overload the card. Close pins 3 and 4 to enable the buzzer.

HDD LED connector (CN2)

The LED indicator for hard disk access is an active low signal (24 mA sink rate).

Reset switch (CN3)

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset. The switch should be rated for 10 mA, 5 V.

Power LED/keyboard lock connector (CN4)

You can connect an LED to indicate if the CPU card is powered on. Pin 1 of CN4 supplies power to the LED, and pin 3 is the ground.

You can use a switch (or a lock) to disable the keyboard. In this state, the PC will not respond to any input from the keyboard. This is useful if you don't want anyone to change or stop a running program. Simply connect the switch between pin 4 and pin 5 of CN4.

If you need to make your own cable, you can find the pin assignments for the board's connector in Appendix B.

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Fan power supply connector (CN5)

CN5 provides power supply to optional CPU cooling fan. Only present when +12 V power is supplied to the board.

SCSI connectors (CN6, CN7) (SBC-599 only)

The SBC-599 has a 50-pin, dual-in-line connector for Ultra SCSI devices and a 68-pin, dual-in-line connector for Ultra Wide SCSI devices. Connection of SCSI devices requires special attention, especially when determining the last drive on the SCSI chain. Refer to Chapter 6 and your device's operating manual for detailed installation advice.

IDE hard drive connector (CN8, CN9)

You can attach up to four Enhanced Integrated Device Electronics hard disk drives to the SBC-596/599 internal controller. The SBC-596/599 IDE controller uses a PCI local-bus interface. This advanced IDE controller supports faster data transfer and allows the IDE hard drive to exceed 528 MB.

CN8 is the primary IDE connector, CN9 is the secondary IDE connector. Each connector supports up to two EIDE hard disk drives.

Connecting the hard drive

The way to connecting drives to primary IDE connector or secondary IDE connector is same.

Wire number 1 on the cable is red or blue, and the other wires are gray.

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1. Connect one end of the cable to CN8/CN9. Make sure that the red (or blue) wire corresponds to pin 1 on the connector.
2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

Floppy connector (CN10)

You can attach up to two floppy drives to the SBC-599 Series on-board controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3½" drives) and a printed-circuit board connector (usually used for 5¼" drives).

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Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN10. Make sure that the red wire corresponds to pin one on the connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.
   If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number one. Look for a number printed on the circuit board indicating pin number one. In addition, the connector on the floppy drive connector may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information.

   If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

If you need to make your own cable, you can find the pin assignments for the board's connector in Appendix B.

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VGA interface connections (SBC-599 only)

The SBC-599 PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD and active LCD displays. The board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

CRT connector (CN16)

CN16 is a standard 15-pin D-SUB connector commonly used for VGA.

Pin assignments for CRT connector CN16 are detailed in Appendix B.

Flat panel connector (CN11)

CN11 consists of a 44-pin, dual-in-line header.

The SBC-599 provides a bias control signal on CN11 that can be used to control the LCD bias voltage. It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5V or +3.3V) and panel video signals are stable. Under normal operation, the control signal (ENAVEE) is active high. When the SBC-599 power is applied, the control signal is low until just after the relevant flat panel signals are present.

LCD power select (J12)

The SBC-599 PCI SVGA interface supports 5V and 3.3V LCD displays. By changing the setting of J12, you can select the panel video signal level to be 5V or 3.3V.

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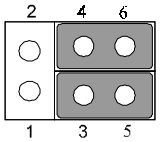
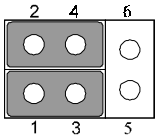
LCD power select		
	5 V	***3.3 V**
J12		

* default setting

Configuration of the VGA interface is done completely via the software utility. You don't have to set any jumpers. Refer to Chapter 3 for software setup details.

Refer to Chapter 3 for details on connecting the four standard LCD's: Sharp LM64183P, LM64P89, Toshiba LTM10C042, Sharp 64C142, and Planar EL Display.

Keyboard connectors (CN12, CN19)

The SBC-596/599 board provides two keyboard connectors. A 5-pin connector (CN12) supports passive backplane applications. A second 6-pin mini-DIN connector (CN19) supports both a keyboard and a PS/2 style mouse.

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COM-port connectors (CN13, CN17)

The SBC-596/599 has two serial ports, COM1 and COM2, to provide connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connectors in Appendix B.

The IRQ and the address range for COM1, 2, are fixed. However, if you wish to disable the port or change these parameters later you can do this in the system BIOS setup. The table below shows the settings for the SBC-599 Series serial ports.

SBC-596/599 port default settings

Port	Address Range	Interrupt
COM1	3F8~3FF	IRQ4
COM2	2F8~2FF	IRQ8

Printer port connector (CN14)

Normally, the parallel port is used to connect the card to a printer. The SBC-596/599 includes a multi-mode (ECP/EPP/SPP) parallel port, accessed through CN14, a 26-pin flat-cable connector. You will need an adapter cable if you use a traditional DB-25 connector. The adapter cable has a 26-pin connector on one end and a DB-25 connector on the other.

The parallel port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

The parallel port interrupt channel is designated to be IRQ7.

You can select ECP/EPP DMA channel via BIOS setup.

IR connector (CN15)

This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through BIOS setup.

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USB connectors (CN18, CN20)

The SBC-596/599 provides two USB (Universal Serial Bus) interfaces which gives complete plug and play, hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification rev. 1.0 and are fuse protected.

The USB interfaces are accessed through two 5-pin flat-cable connectors, CN18 and CN20. You will need an adapter cable if you use a standard USB connector. The adapter cable has a 5-pin connector on one end and an USB connector on the other.

The USB interfaces can be disabled in the system BIOS setup.

Ethernet connector (UTP1, SBC-599 only)

The SBC-599 is equipped with a high performance 16-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3 10Mbps CSMA/CD standards. It is supported by all major network operating systems and is 100% Novell NE-2000 compatible. On board RJ-45 jack provides convenient 10 Base-T RJ-45 operation.

The medium type can be configured via the RSET8029.EXE program included on the utility disk. (See Chapter 3 for detailed information.)

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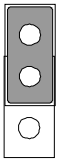
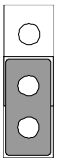
Watchdog timer configurationon

An on-board watchdog timer reduces the chance of disruptions which EMP (electro-magnetic pulse) interference can cause. This is an invaluable protective device for standalone or unmanned applications. Setup involves one jumper and running the control software (refer to Appendix A).

Watchdog select (J14)

When the watchdog timer activates (CPU processing has come to a halt), it can reset the system or generate an interrupt on IRQ11. This can be set via setting J14 as shown below:

Watchdog select

	*System reset	IRQ11
J14	 1 2 3	 1 2 3

* default setting

For information on programming the watchdog timer, see Appendix A.

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CHAPTER 3

Software Configuration

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements. AWARD System BIOS is covered in Chapter 4.

Sections include:

- Introduction
- Utility with IDE Bus Master driver
- Utility with VGA BIOS (SBC-599 only)
- VGA display software configuration
- Connections for four standard LCDs
- Ethernet interface configuration

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Introduction

The SBC-596/599 system BIOS and custom drivers are located in a 128 Kbyte, 32-pin (JEDEC spec.) Flash ROM device. A single Flash chip holds the system BIOS, VGA BIOS, and network Boot ROM image. The display can be configured via software. This method minimizes the number of chips and eases configuration. You can change the display BIOS simply by reprogramming the Flash chip.

Utility with IDE Bus Master Driver

The SBC-596/599 is supplied with a software utility with IDE Bus Master driver which provides better system performance. The IDE Bus Master driver supports OS/2, Windows 95 and Windows NT O.S.

Utility with VGA BIOS (SBC-599 only)

The SBC-599 is supplied with a software utility with VGA BIOS. This CD-ROM contains the necessary files for setting up the CD-ROM VGA display. Directories and files on the CD-ROM are as followed:

VGA BIOS: README.DOC

AWDFLASH.EXE

599_CRT.BIN

599_TFT.BIN

599_STN.BIN

599_MON.BIN

599_EL.BIN

CBROM.EXE

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AWDFLASH.EXE
This program allows you to write the VGA display driver files to the BIOS Flash ROM. The VGA files all come ready formatted for the SBC-599 with .BIN extensions. They are custom written and can be made available upon request.

599_CRT.BIN
System BIOS which supports CRT only

599_TFT.BIN
System BIOS which supports 640X480 color TFT (Toshiba LTM10C042)

599_STN.BIN
System BIOS which supports 640X480 color STN DD 8/16-bit displays (Sharp LM64C142)

599_MON.BIN
System BIOS which supports 640X480 dual scan monochrome displays (Sharp LM64P83/64P89)

599_EL.BIN
System BIOS which supports 640X480 EL displays (PLANAR EL640X480-A series)

CBROM.EXE
This program allows you to combine your own VGA BIOS with system BIOS

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VGA display software configuration (SBC-599 only)

The SBC-599 on-board VGA interface supports a wide range of popular LCD, EL, gas plasma flat panel displays and traditional analog CRT monitors. With on-board 1M display memory, the interface can drive CRT displays with resolutions up to 1024 x 768 in 256 colors. It is also capable of extending up to 2 MB of display memory to provide resolutions of 1024 x 768 in 64K colors.

The VGA interface is configured completely via the software utility, so you don't have to set any jumpers. Configure the VGA display as follows:

1. Apply power to the SBC-599 with a color TFT display attached. This is the default setting for the SBC-599. Ensure that the AWDFLASH.EXE and *.BIN files are located in the working drive.

NOTE: *ENSURE THAT YOU DO NOT RUN AWDFLASH.EXE WHILE YOUR SYSTEM IS OPERATING IN EMM386 MODE.*

2. At the prompt, type AWDFLASH.EXE and press <Enter>.
3. At the prompt, enter the new BIN file that supports your display. When you are sure that you have entered the file name correctly, press <Enter>.
4. The screen will ask "Do you want to save BIOS?" Press Y if you wish to save the existing configuration before changing it. Then type the name under which you want to save the current configuration.
5. The prompt will then ask "Are you sure to program?" Press Y if you want the new file to be written into the BIOS. Press N to exit the program.

The new VGA configuration will then write to the ROM BIOS chip. This configuration will remain the same until you run the AWDFLASH.EXE program and change the settings.

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Connections for four standard LCDs (SBC-599 only)

Connections to Sharp LM64183P, LM64P89 (640 x 480 DSTN MONO LCD)

LM64183/64P89		SBC-599 CN11	
Pin	**Pin name**	**Pin**	**Pin name**
CN1-1	S	36	FLM
CN1-2	CP1	38	LP
CN1-3	CP2	35	SHFCLK
CN1-4	DISP	5	+5 V
CN1-5	VDD	6	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	-	external power*
CN1-8	DU0	12	P3
CN1-9	DU1	11	P2
CN1-10	DU2	10	P1
CN1-11	DU3	9	P0
CN1-12	DL0	16	P7
CN1-13	DL1	15	P6
CN1-14	DL2	14	P5
CN1-15	DL3	13	P4

*LM64183P -17V
LM64P89 -20V

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Connections to PLANAR EL (640 x 480 AD4 EL)

PLANAR 640 x 480 AD4		SBC-599H CN11	
Pin	**Pin name**	**Pin**	**Pin name**
1	GND	3	GND
2	DO	21	P12
3	GND	3	GND
4	D1	22	P13
5	GND	3	GND
6	D2	23	P14
7	NC	—	—
8	D3	24	P15
9	NC	—	—
10	D4	17	P8
11	NC	—	—
12	D5	18	P9
13	NC	—	—
14	D6	19	P10
15	GND	4	GND
16	D7	20	P11
17	GND	4	GND
18	VCLK	42	ASHFCLK
19	GND	4	GND
20	/BLANK	—	—
21	GND	8	GND
22	HS	37	M
23	NC	—	—
24	VS	36	FLM
25	NC	—	—
26	SELFTST	39	GND
27	COLMAP	39	GND
28	ENABLE	—	—
29	RESERVED	—	—
30	/LOWPOW	—	—
31,32	NC	—	—
33	RESERVED	—	—
34	NC	—	—

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Connections to Toshiba LTM10C042 (640 x 480 TFT Color LCD)

LTM10C042		PCA-6159H CN11	
Pin	**Pin name**	**Pin**	**Pin name**
1	GND	3	GND
2	CLK	35	SHFCLK
3	GND	4	GND
4	R0	27	P18
5	R1	28	P19
6	R2	29	P20
7	GND	8	GND
8	R3	30	P21
9	R4	31	P22
10	R5	32	P23
11	GND	33	GND
12	G0	19	P10
13	G1	20	P11
14	G2	21	P12
15	GND	33	GND
16	G3	22	P13
17	G4	23	P14
18	G5	24	P15
19	GND	34	GND
20	ENAB	37	M
21	GND	34	GND
22	B0	11	P2
23	B1	12	P3
24	B2	13	P4
25	GND	39	GND
26	B3	14	P5
27	B4	15	P6
28	B5	16	P7
29	GND	39	GND
30	VDD	5	+5V
31	VDD	6	+5V

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Connections to Sharp LM64C142 (640 x 480 DSTN Color LCD)

LM64C142		SBC-599H CN11	
Pin	**Pin name**	**Pin**	**Pin name**
CN1-1	YD	36	FLM
CN1-2	LP	38	LP
CN1-3	XCX	35	SHFCLK
CN1-4	DISP	5	+5 V
CN1-5	VDD	6	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	-	+27 V*
CN1-8	DU0	20	P11
CN1-9	DU1	19	P10
CN1-10	DU2	18	P9
CN1-11	DU3	17	P8
CN1-12	DU4	12	P3
CN1-13	DU5	11	P2
CN1-14	DU6	10	P1
CN1-15	DU7	9	P0
CN2-1	VSS	4	GND
CN2-2	DL0	24	P15
CN2-3	DL1	23	P14
CN2-4	DL2	22	P13
CN2-5	DL3	21	P12
CN2-6	DL4	16	P7
CN2-7	DL5	15	P6
CN2-8	DL6	14	P5
CN2-9	DL7	13	P4
CN2-10	VSS	8	GND

*external power

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Ethernet software configuration (SBC-599 only)

The SBC-599 on-board Ethernet interface supports all major network operating systems. To configure the medium type, to view the current configuration, or to run diagnostics, do the following:

1. Power the SBC-599 on. Ensure that the RSET8029.EXE file is located in the working drive.
2. At the prompt type RSET8029.EXE and press <Enter>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and Down keys. To change a selected item, press <Enter>, and a screen will appear with the available options. Highlight your option and press <Enter>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional information.
4. After you have made your selections and are sure this is the configuration you want, press ESC. A prompt will appear asking if you want to save the configuration. Press Y if you want to save.

The Ethernet Setup Menu also offers three very useful diagnostic functions. These are:

1. Run EEPROM test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen that shows the format and result of any diagnostic tests undertaken.

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CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

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System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

```
press <F1> to RESUME
```

Write down the message and press the F1 key to continue the bootup sequence.

System configuration verification

These routines check the current system configuration against the values stored in the board's CMOS memory. If they don't match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The SBC-596/599 CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

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AWARD BIOS setup

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering setup

Power on the computer and press <Del> immediately. The CMOS SETUP UTILITY main program screen will appear with the following options:

Setup program initial screen

Load Defaults

The "**LOAD BIOS DEFAULTS**" option loads the minimized settings for troubleshooting. "**LOAD SETUP DEFAULTS**", on the other hand, is for loading optimized defaults for regular use. Choosing defaults at this level, will modify all applicable settings.

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STANDARD CMOS SETUP

When you choose the “STANDARD CMOS SETUP” option from the “INITIAL SETUP SCREEN” menu**,** the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

***CMOS setup screen**

*Your BIOS configuration screen will look similar to this screen capture. The actual screen may vary, owing to different BIOS versions

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BIOS FEATURES SETUP

The “BIOS FEATURES SETUP” option consists of configuration entries that allow you to improve your system performance, or let you set up some system features according to your preference.

By choosing the “BIOS FEATURES SETUP” option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer’s default values for the SBC-596/599.

BIOS FEATURES SETUP
AWARD SOFTWARE, INC.
Virus Warning : Disabled
CPU Internal Cache : Enabled
External Cache : Enabled
Quick Power On Self Test : Enabled
Boot Sequence : C,A
Swap Floppy Drive : Disabled
Boot Up Floppy Seek : Enabled
Boot Up NumLock Status : On
Boot Up System Speed : Low
Typematic Rate Setting : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec) : 250
Security Option : Setup
IDE second channel control : Enabled
PCI/VGA Palette Snoop : Enabled
OS Select For DRAM > 64MB : Non-OS2
Video BIOS Shadow : Enabled
C8000-CBFFF Shadow : Disabled
CC000-CFFFF Shadow : Disabled
D0000-D3FFF Shadow : Disabled
D4000-D7FFF Shadow : Disabled
D8000-DBFFF Shadow : Disabled
DC000-DFFFF Shadow : Disabled
ESC : Quit
F1 : Help
F5 : Old Values
F6 : Load BIOS Defaults
F7 : Load Setup Defaults
↑↓→← : Select Item
PU/PD/+/- : Modify
(Shift)F2 : Color

***BIOS features setup**

*Your BIOS configuration screen will look similar to this screen capture. The actual screen may vary, owing to different BIOS versions

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CHIPSET FEATURES SETUP

This “CHIPSET FEATURES SETUP” option controls the configuration of the board’s chipset.

By choosing the “CHIPSET FEATURES SETUP” option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer’s default values for the SBC-596/599.

***CHIPSET features setup**

*Your BIOS configuration screen will look similar to this screen capture. The actual screen may vary, owing to different BIOS versions

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POWER MANAGEMENT SETUP

The “POWER MANAGEMENT SETUP” option allows you to reduce power consumption. This feature turns off the video display and shuts down the hard disk after a period of inactivity.

By choosing the “POWER MANAGEMENT SETUP” option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer’s default values for the SBC-596/599.

POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.
Power Management : Disabled
PM Control by APM : No
Video Off Method : Blank Screen
Video Off After : N/A
Doze Mode : Disabled
Standby Mode : Disabled
Suspend Mode : Disabled
HDD Power Down : Disabled
Throttle Duty Cycle : 12.5%
IDE Active In Suspend : Disabled
VGA Active Monitor : Disabled
Resume by Ring : Disabled
** Break Event From Suspend **
Irq 8 Clock Event : Disabled
** Reload Global Timer Events **
IRQ[3-7,9-15],NMI : Disabled
Primary IDE 0 : Disabled
Primary IDE 1 : Disabled
Secondary IDE 0 : Disabled
Secondary IDE 1 : Disabled
Floppy Disk : Disabled
Serial Port : Disabled
Parallel Port : Disabled
Esc : Quit
F1 : Help
F5 : Old Values
F6 : Load BIOS Defaults
F7 : Load Setup Defaults
↑↓→← : Select Item
PU/PD/+/- : Modify
(Shift)F2 : Color

***Power management setup**

*Your BIOS configuration screen will look similar to this screen capture. The actual screen may vary, owing to different BIOS versions

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PnP/PCI CONFIGURATION

The “PnP/PCI CONFIGURATION” option configures the PCI bus slots.

By choosing the “PnP/PCI CONFIGURATION” option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer’s default values for the SBC-596/599.

ROM PCI/ISA BIOS (XXXXXXXX)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.
PNP OS Installed : No
Resources Controlled By : Auto
Reset Configuration Data : Disabled
PCI IDE IRQ Map To : PCI-AUTO
Primary IDE INT# : A
Secondary IDE INT# : A
ESC : Quit
F1 : Help
F5 : Old Values
F6 : Load BIOS Defaults
F7 : Load Setup Defaults
Select Item
PU/PD/+/- : Modify
(Shift)F2 : Color

***PnP/PCI Configuration**

*Your BIOS configuration screen will look similar to this screen capture. The actual screen may vary, owing to different BIOS versions

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INTEGRATED PERIPHERALS

By choosing the “INTEGRATED PERIPHERALS” option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer’s default values for the SBC-596/599.

INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.
IDE HDD Block Mode : Enabled
IDE Primary Master PIO : Auto
IDE Primary Slave PIO : Auto
IDE Secondary Master PIO : Auto
IDE Secondary Slave PIO : Auto
IDE Primary Master UDMA : Auto
IDE Primary Slave UDMA : Auto
IDE Secondary Master UDMA: Auto
IDE Secondary Slave UDMA: Auto
On-Chip Primary PCI IDE: Enabled
On-Chip Secondary PCI IDE: Enabled
Onboard PCI SCSI Chip : Enabled
KBC input clock : 8 MHz
Onboard KBC Controller : Enabled
Onboard Serial Port 1 : 3F8/IRQ4
Onboard Serial Port 2 : 2F8/IRQ3
UR2 Mode : Standard
Onboard Parallel Port : 378/IRQ7
Parallel Port Mode : ECP+EPP
ECP Mode Use DMA : 3
Panel Type : 640x480 18Bit TFT
ESC : Quit
F1 : Help
F5 : Old Values
F6 : Load BIOS Defaults
F7 : Load Setup Defaults

***Integrated Peripherals**

*Your BIOS configuration screen will look similar to this screen capture. The actual screen may vary, owing to different BIOS versions

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Load BIOS defaults

"LOAD BIOS DEFAULTS" loads the default system values directly from ROM. If the stored record created by the Setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the SBC-596/599 on.

***Load BIOS defaults screen**

*Your BIOS configuration screen will look similar to this screen capture. The actual screen may vary, owing to different BIOS versions

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USER PASSWORD

To change the password, choose the USER PASSWORD option form the Setup main menu and press <Enter>.

1. If the CMOS is bad or this option has never been used, a default password is stored in the ROM. The screen will display the following messages:

Enter Password:

Press <Enter>.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

Confirm Password:

Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can be at most eight (8) characters long.

Remember - to enable this feature, you must first select either Setup or System in the BIOS FEATURES SETUP.

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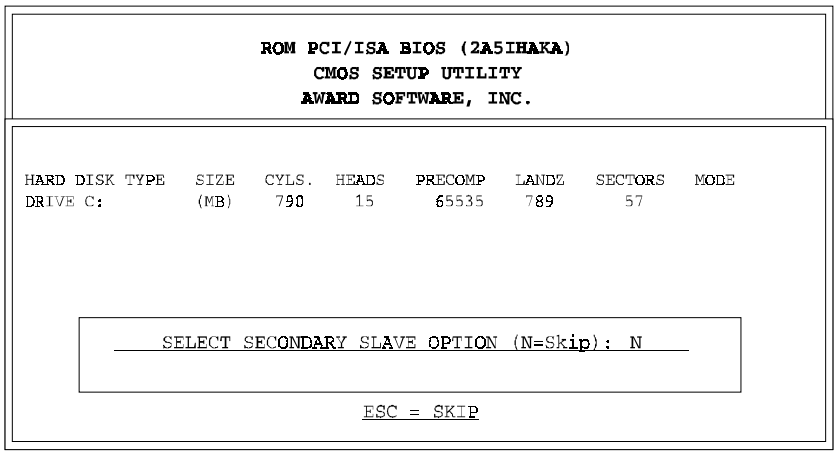
AUTO DETECT HARD DISK

The IDE HDD AUTO DETECTION utility can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration.


ROM PCI/ISA BIOS (2A5IHAKA)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.
HARD DISK TYPE SIZE CYLS. HEADS PRECOMP LANDZ SECTORS MODE
DRIVE C: (MB) 790 15 65535 789 57
SELECT SECONDARY SLAVE OPTION (N=Skip): N
ESC = SKIP

***IDE HDD auto detection screen**

*Your BIOS configuration screen will look similar to this screen capture. The actual screen may vary, owing to different BIOS versions

Save & exit setup

If you select this option and press <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

Exit without saving

Selecting this option and pressing <Enter> lets you exit the Setup program without recording any new values or changing old ones.

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CHAPTER 5

PCI SVGA Setup (SBC-599 only)

The SBC-599 features an on-board PCI flat panel/VGA interface. This chapter provides instructions for installing and operating the software drivers on the included Supporting CD-ROM.

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Before you begin

To facilitate the installation of the enhanced display device drivers and utility software, you should read the instructions in this chapter carefully before you attempt installation. The enhanced display drivers for the SBC-599 board are located on the software installation diskette. You must install the drivers and utility software by using the supplied SETUP program for DOS drivers

NOTE: *THE FILES ON THE SOFTWARE INSTALLATION DISKETTE ARE COMPRESSED. DO NOT ATTEMPT TO INSTALL THE DRIVERS BY COPYING THE FILES MANUALLY. YOU MUST USE THE SUPPLIED SETUP PROGRAM TO INSTALL THE DRIVERS.*

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user's manual before performing the installation.

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Installation

The drivers include Windows 3.1, Windows 95, Windows NT drivers, and OS/2 drivers.

Simultaneous display mode

The 65550 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. It also supports interlaced and non-interlaced analog monitors (VGA color and VGA monochrome) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multisync) monitors are supported as analog monitors.

Both CRT and panel displays can be used simultaneously. The SBC-599 can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. In the utility diskette, there are three .COM files that can be used to select the display. Simply type the filename at the DOS prompt:

CT.COM Enables CRT display only

FP.COM Enables panel display only

SM.COM Enables both displays at the same time.

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Sleep mode

The display driver contains two files that support sleep mode. Simply type the filename at the DOS prompt:

ON.COM switches to normal display mode.

OFF.COM switches to sleep mode.

Driver installation

Necessary prerequisites

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver or utility you should: know how to copy files from *Supporting CD-ROM* to a directory on the hard disk, understand the MS-DOS directory structure. If you are uncertain about any of these concepts, please refer to the DOS or Windows user reference guides for more information before you proceed with the installation.

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Before you begin

The display driver contains drivers for several versions of certain applications. You must install the correct version in order for the driver to work properly so make sure you know which version of the application you have.

Windows setup

These drivers are designed to work with Microsoft Windows 3.1. You may install these drivers through Windows or in DOS.

Step 1: Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly.

Step 2: Place the Supporting CD-ROM in CD-ROM drive. In Windows Program Manager, choose ***File*** from the Options Menu. Then from the pull-down menu, choose ***Run . . . .*** At the command line prompt, choose CD-ROM drive:\CD ROM\"model name" \driver\vga driver\win\win31\setup.exe. Press the <ENTER> key or click ***OK*** to begin the installation. At this point, the setup program locates the directory where Windows is installed. For proper operation, the drivers must be installed in the Windows subdirectory. Press <ENTER> to complete the installation. Once completed, the Display Driver Control Panel appears on the screen. This Control Panel allows you to select and load the installed drivers.

"model name": the model number of your product

Changing Display Drivers in Windows

To change display drivers in Windows, select the ***Windows Setup*** icon from the Main window. You will be shown the current setup configuration. Select ***Change System Settings*** from the Option menu. Click on the arrow at the end of the Display line. You will be shown a list of display drivers. Click on the driver you want. Then click on the ***OK*** button. Follow the directions to complete the setup.

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Changing Color Schemes

After you change display drivers, you may notice that the color scheme used by Windows looks strange. This is because different drivers have different default colors. To change the color scheme, select the ***Control Panel*** from the Main window. Select the ***Color*** icon. You will be shown the current color scheme. Choose a new color scheme and click the ***OK*** button.

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Windows 95 Drivers Setup Procedure

1. Boot system with VGA or SuperVGA driver.
2. Select properties from a menu after right button press.
3. Select display.
4. Select Change Display.
5. Select Change Monitor.
6. Select Change Adapter.
7. Select Have Disk.

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Windows NT Drivers Setup Procedure

Step 1

1. Install Windows NT as you normally would for a VGA display.
2. First click the Start button, choose Settings and click on Control Panel.
3. Choose the Display icon and click on the icon.
4. In the Display Properties window, click on the Settings tab.
5. Click on Change Display Type. In the Change Display Type window, click on the Change button under Adapter Type. This will bring up the Select Device window.

Step 2

1. In the Select Device window, click on the Other button. Enter source directory where the Windows NT driver files are located.
2. Press <ENTER> and the name of the Chips and Technologies Video Accelerator driver will appear at the end of Models list box. Scroll to the end of the list box and double click on the driver.
3. Once the installation is complete, the system must be shut down and restarted.

Step 3

1. Upon restarting your computer, select the desired display settings from the Display property dialog box.
2. Click on Test to test the newly selected graphics mode. A color test screen should appear, followed by the Testing Mode window.
3. Click on Yes to continue. The Display Settings Change window will appear.
4. Click on Restart Now for the new settings to take effect.

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OS/2 Drivers Setup Procedure

Preliminary Steps

The following steps must be performed before you install the 65550/554 display driver:

1. OS/2 DOS Support must be installed.
2. If you previously installed SVGA support, you must reset the system to VGA mode. VGA is the default video mode enabled when OS/2 is installed.

To restore VGA mode, use Selective Install and select VGA for Primary Display. For more information on this procedure, see the section on Changing Display Adapter Support in the OS/2 User's Guide.

Installing from Diskette

To install this driver, do the following steps:

1. Open an OS/2 full screen or windowed session.
2. Place the Supporting CD-ROM into your CD-ROM drive.
3. At the OS/2 command prompt, type the following commands to copy the files to the OS/2 drive:

   Type:

   ```
   CD-ROM drive: \CD ROM\"model name"\driver\vga
   driver\OS2\
   ```

   ```
   "model name": the model number of your product
   ```

When the Setup Program is completed, you will need to perform a shutdown and then restart the system in order for changes to take effect.

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A log of the information output during the install can be found in <root>:\OS2\INSTALL\DISPLAY.LOG

4. After restarting the system, perform the following steps:

   1). Open the OS/2 System folder.

   2). Open the System Setup folder.

   3). Open the Display Driver Install Object

   This step will execute the Display Driver Installation (DSPINSTL) utility program to finish installation of the new drivers.

   4). When the Display Driver Install window appears, select Primary Display and then select OK.

   5). When The Primary Display Driver List window appears, select “Chips and Technologies 65550/554” from the list of adapter types, then select OK to install the video driver.

   6). When the installation is complete, you will need to shutdown and then restart the system for the changes to take effect. Make sure to remove the install diskette before restarting the system.

When the system has restarted, the display driver will be initialized for 640x480x256 Color, 60Hz refresh. To switch to a different video resolution, color depth, or refresh rate, follow the steps below.

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Selecting Monitor Type

Monitor type is initially set to DEFAULT. This DEFAULT setting may not allow you to select all resolution/refresh combinations that are available for your monitor. The following steps can be done to select monitor type. This section applies only after installation, or when a different monitor is used.

1. Open the OS/2 System folder.
2. Open the System Setup folder.
3. Open the System object.
4. When the System - Settings notebook appears, select the Screen tab. This will take you to page 2 of the settings.
5. On Screen page 2, select your monitor type from the Display Name list. If your monitor is not listed, select DEFAULT. Return to Screen page 1.

It may be necessary to restart your system to have all refresh rate options available.

Selecting Screen Resolution/Refresh Rate

To switch to a different video resolution, color depth or refresh rate,

follow the steps below.

1. Open the OS/2 System folder.
2. Open the System Setup folder.
3. Open the System object.
4. From the selection windows provided, select a new Screen Resolution and Screen refresh rate.

Please note, Refresh rates, other than 60Hz, are only valid when the display is switched to CRT only display mode.

5. Close the System-Settings notebook.
6. Perform a shutdown and restart for the changes to take effect.

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Installation Notes

1. During the installation of this driver, DISPLAY.LOG and DSPINSTL.LOG files are created in \OS2\INSTALL directory. These files identify the OS/2 system files that were updated, and indicate whether the installation was successful. The DISPLAY.LOG file also contains a string that identifies the version of driver that was installed. This information may be important when reporting an installation problem.

2. During installation, DSPINSTL will invoke the SVGA Configuration program SVGA.EXE to determine the hardware configuration, and create the file \OS2\INSTALL\SVGADATA.PMI. If this file is not created, the adapter will not be supported. When this step is done, the display will be blanked, and you may see a series of flashes on the display and/or what appears to be a "corrupted" display. This is normal, as the configuration process is doing Video BIOS mode sets to determine which screen resolutions BIOS supports. This configuration information is then used to provide the System-Settings Resolution and Refresh selections.

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CHAPTER 6

SCSI Setup and Configurations (SBC-599 only)

The SBC-599 is equipped with two SCSI interfaces. This chapter provides basic SCSI concepts and instructions for installing the software drivers with the included SCSI driver diskettes. At the end of this chapter provides the SCSI device troubleshooting tips.

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Installation and Setup

The SBC-599 is equipped with an Adaptec AIC-7880 Ultra Wide PCI-to-Ultra SCSI host adapter which provides a powerful multitasking interface between your computer's PCI bus and SCSI devices (disk drives, CD-ROM drives, scanners, tape backups, removable media drives, etc.). Up to a total of 15 SCSI devices can be connected to the internal or external SCSI connector on AIC-7880.

If you need to configure the SCSI, the onboard SCSI Select configuration utility allows you to change host adapter settings without opening the computer or handling the board. The SCSI Select utility also contains a utility to low-level format and verifies the disk media on your hard disk drives.

SCSI Configuration Guidelines

Before installing your SCSI devices, you should understand the basic SCSI concepts described in this section. The information will help you set up your host adapter and devices so they function properly.

SCSI ID Numbers

Each device attached to the host adapter, as well as the host adapter itself, must have a unique SCSI ID number (0-15). The SCSI ID serves two purposes:

- It uniquely defines each SCSI device on the SCSI bus.

- It determines the device's priority on the SCSI bus.

SCSI ID7 has the highest priority. The priority of the remaining IDs, in descending order, is 6 to 0 and 15 to 8.

Note: SCSI IDs play no role in determining the order in which devices are cabled to the host adapter.

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The AIC-7880 supports the SCSI Configured AutoMatically (SCAM) protocol, which assigns SCSI IDs dynamically and resolves SCSI ID conflicts automatically at bootup. If your system includes SCSI disk drives or other devices that support SCAM, you do not need to manually assign SCSI IDs to these devices.

Most SCSI devices currently in use, however, do not support SCAM. The SCSI IDs on these devices must be set manually. To change the SCSI IDs on these devices, refer to the device's documentation.

If you install more than one SCSI host adapter in the computer, each adapter forms a separate SCSI bus. SCSI IDs can be reused as long as the ID is assigned to a device on a separate SCSI bus (e.g., each SCSI bus can have a device with SCSI ID 0).

SCSI Terminators

To ensure reliable communication, the SCSI bus must be properly terminated. Termination is controlled by a set of electrical resistors, called terminators. Terminators must be placed (or enabled) at the two extreme ends of the SCSI bus. All devices that lie between the ends must have their terminators removed (or disabled).

Termination on the Ultra Wide SCSI itself is controlled by software commands via the SCSISelect utility. The default setting is set to Automatic. When set to Automatic, if the AIC-7880 detacts that SCSI cables are connected to any of its two SCSI connectors, it automatically sets the termination setting for the low and high bytes of the 16-bit Wide SCSI bus. The low byte controls 8-bit SCSI; the low and high bytes together control 16-bit Wide SCSI.

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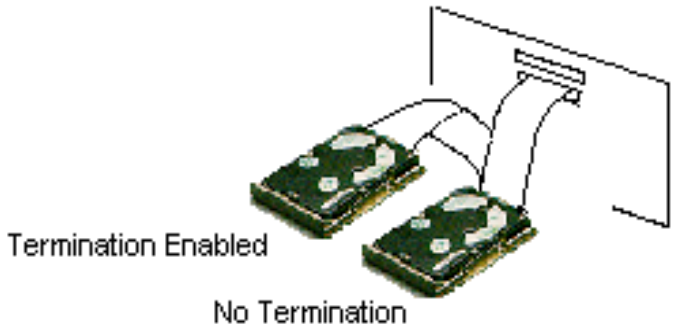
We recommend that you leave SCSI set to its default setting of Automatic. The following table lists the termination configurations.

The following figures show termination examples for the AIC-7880.

Devices Connected	Termination Low	Termination High
68-pin internal connector only	ON	ON
50-pin internal connector only	ON	ON
50-pin and 68-pin internal connectors	OFF	ON



AIC-7880 Ultra Wide SCSI

Termination	
Low	High
ON	ON

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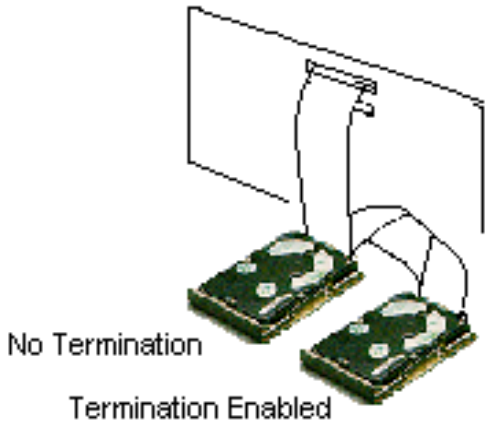

AIC-7880 Ultra Wide SCSI

Termination	
Low	High
ON	ON

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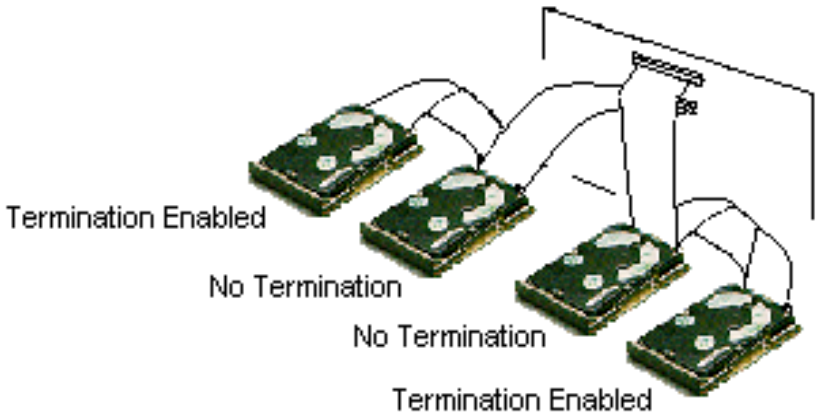

AIC-7880 Ultra Wide SCSI

Termination	
Low	High
OFF	ON

SCSI Termination Examples

Installing SCSI Devices

You can connect up to 15 devices (seven standard internal and eight Wide (16-bit) internal SCSI devices, or 15 Wide internal SCSI devices) to the Ultra Wide SCSI.

Connecting Internal SCSI Devices

If you are connecting internal SCSI devices, make sure you have an internal SCSI cable with enough connectors to accommodate all of your devices.

1. Prepare each SCSI device for installation; configure the device SCSI ID and terminators (terminate the last internal device attached to the cable).

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2. Install the SCSI device in your computer. Refer to your computer and device documentation for instructions.

3. Plug the connector at one end of the internal SCSI cable into the host adapter's internal SCSI connector.

Make sure the colored stripe on one side of the cable is aligned with pin-1 of the host adapter's connector. Pin-1 of the connector is usually designated by a small triangle "D", or a "1" on the connector.

4. Plug the remaining connectors on the cable into the connectors on the back of the devices.

Make sure the colored stripe on the cable is aligned with pin-1 of the device's connector.

5. Connect a DC power cable (from your computer's power supply) to the power connector on the SCSI device.

Configuring the SCSI Adapter

Access the SCSI BIOS by holding down both CTRL and A keys when you see the BIOS banner message listing the driver name and the attached devices. For example:

Adaptec AIC-7880 Ultra /Wide W BIOS v1.26

(c) 1996 Adaptec, Inc. All Rights Reserved.

<<<Press <Ctrl><A> for SCSISelect(TM) Utility>>>

The SCSISelect screen will come up. Instructions on how to move the cursor and select options are listed on the bottom of the program widows. You can select either Configure/View Host Adapter Settings or SCSI Disk Utilities.

Configure/View Host Adapter Settings

Host Adapter SCSI Termination. Low ON/High ON

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- When using 50-pin connector only, choose “Low ON/High ON” (Default)

- When using 68-pin connector only, choose “Low ON/High ON” (Default)

- When using both 50-pin & 68-pin, choose “Low OFF/High ON”

Select the default of “Low ON/High ON?” and press Enter, then use the up and down arrows to make your new selection and press Enter. Press ESC to go back to the Options menu. Press ESC again and select Yes to exit the program.

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Basic Host Adaptec Settings	Default
Host Adapter SCSI ID	7
SCSI Parity Checking	Enabled
Host Adapter SCSI Termination	Low ON/High ON

Boot Device Settings	Default
Boot Target ID	0
Boot LUN Number[1]	0

SCSI Device Settings	Default
Initiate Sync Negotiation	Yes (Enabled)
Maximum Sync Transfer Rate	Yes (Enabled)
Enable Disconnection	20 MBytes/sec
Initiate Wide Negotiation	Yes (Enabled)
Send Start Unit Command	No (Disabled)

Advanced Host Adapter Settings	Default
Plug and Play SCAM Support	Disabled
Host Adapter BIOS	Enabled
Support Removable Disks Under BIOS as Fixed Disks[2]	Boot only
Extended BIOS Translation for DOS Drives >1 GByte[2]	Enabled
Display <Ctrl-A> Message During BIOS Initialization[2]	Enabled
Multiple LUN Support	Disabled
Support for Ultra SCSI Speed	Disabled

1. Setting is valid only if multiple LUN Support is enabled.
2. Settings are valid only if host adapter BIOS is enabled.

Basic Host Adapter Settings

The basic host adapter settings are the SCSISelect settings most likely to require any modification.

- **Host Adapter SCSI ID** - This option sets the host adapter's SCSI ID. The default setting is SCSI ID 7, which give the

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host adapter the highest priority on the SCSI bus. We recommend that you leave the host adapter set to SCSI ID7.

- **SCSI Parity Checking** - This option determines whether the host adapter verifies the accuracy of data transfer on the SCSI bus. The default setting is Enabled. You should disable SCSI Parity Checking if any SCSI device connected to the SBC-599 does not support SCSI parity; otherwise, leave it enabled. Most SCSI devices do support SCSI parity. If you are not sure whether a device supports SCSI parity, consult the documentation for the device.
- **Host Adapter SCSI Termination** - This option sets termination on the host adapter. The default setting for the on-board SCSI is low ON/High ON. If you want to manually set the termination setting, see SCSI Terminators for appropriate settings.

Boot Device Settings

The boot device settings allow you to specify the device from which you wish to boot your computer.

- **Boot Target ID** - This option specifies the SCSI ID of the device you wish to boot from. The default setting is SCSI ID 0. The SCSI ID selected here must correspond to the ID configured on the boot device.
- **Boot LUN number** - If your boot device has multiple LUNs (Logical Unit Numbers) and Multiple LUN Support is enabled, this option allows you to specify which LUN to boot from on your boot device. The default setting is LUN 0.

SCSI Device Settings

The SCSI device settings allow you to configure certain parameters for each device on the SCSI bus. To configure a specific device, you must know the SCSI ID assigned to that device. If you are not sure of the SCSI ID, see Using the SCSI Disk Utilities.

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■**Initiate Sync Negotiation** - This option determines whether the host adapter initiates synchronous data transfer negotiation (Sync Negotiation) between the device and host adapter. The default setting is Yes.

Synchronous negotiation is a SCSI feature that allows the host adapter and its attached SCSI devices to transfer data in synchronous mode. Synchronous data transfer is faster than asynchronous data transfer.

The host adapter always responds to Sync Negotiation if the SCSI device initiates it. If neither the host adapter nor the SCSI device initiate Sync Negotiation, data is transferred asynchronously.

Normally, you should leave the Initiate Sync Negotiation setting enabled, because most SCSI devices support synchronous negotiation and it allows for faster data transfer.

Note: Some older SCSI-1 devices do not support Sync Negotiation. This may cause your computer to operate erratically or hang if Initiate Sync Negotiation is set to yes. Set Initiate Sync Negotiation to No for these devices.

■ **Initiate Wide Negotiation** —This option determines whether the host adapter attempts 16-bit data transfer (Wide negotiation) instead of 8-bit data transfer. The default setting is Yes.

Note: Some 8-bit SCSI devices may have trouble handling Wide negotiation, which may result in erratic behavior or a hang condition. For these devices, set Initiate Wide Negotiation to No.

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When set to Yes, the host adapter attempts 16-bit transfer. When set to No, 8-bit data transfer is used unless the SCSI device itself requests Wide negotiation. The effective transfer rate is doubled when 16-bit data transfer is sued because the data path for Wide SCSI is twice the size of normal 8-bit SCSI. For example, a transfer rate of 10 Mbytes/sec becomes 20Mbytes/sec, and a transfer rate of 20 Mbytes/sec (Ultra SCSI) becomes 40 Mbytes/sec.

- **Maximum Sync Transfer Rate** – This option sets the maximum synchronous data transfer rate that the host adapter supports. The default setting is 20.0 for the Ultra Wide SCSI. The host adapter supports rate up to the Ultra SCSI maximum of 20.0 Mbytes/sec (Ultra Wide SCSI provides an effective maximum synchronous transfer rate of 40.0 Mbytes/sec). If your device is an Ultra SCSI device, you can use the maximum value of 20.0. If your device is not an Ultra SCSI device select a transfer rate of 10.0.
  If the host adapter is set not to negotiate for synchronous data transfer (that is, Initiate Sync Negotiation is set to no), then the maximum synchronous transfer rate is the maximum rate that the host adapter accepts from the device during negotiation. (This is standard SCSI protocol.).
- **Enable Disconnection** – This option determines whether the host adapter allows the SCSI device to disconnect from the SCSI bus (sometimes called Disconnect/Reconnect). Enabling disconnection allows the host adapter to perform other operations on the SCSI bus while the SCSI device is temporarily disconnected. The default setting is Yes.
  You should leave Enable Disconnection set to yes if two or more SCSI devices are connected to the host adapter. This optimizes SCSI bus performance. If only one SCSI device is connected to the host adapter, set Enable Disconnection to No to achieve slightly better performance.
- **Send Start Unit Command** – This option determines whether the Start Unit Command is sent to the SCSI devices at boot up (most devices do not require this). The default setting is No.

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Setting this option to yes reduces the load on your computer's power supply by allowing the host adapter to start SCSI devices one-at-a-time when you boot your computer. When set to No, the devices are allowed to start at the same time. Most devices require you to set a jumper before they can respond to this command.

Note: If the Send Start Unit Command is set to yes for many devices, the boot time will vary depending on how long it takes each drive to start.

Advanced Host Adapter Settings

The advanced host adapter settings should not be changed unless absolutely necessary.

- **Plug and Play SCAM Support** - This option determines whether the SCSI automatically assigns SCSI Ids to attached SCSI Devices that support the SCAM protocol. The default setting is Disabled.
  Most non-SCAM devices tolerate SCAM protocol, so you can enable this option even for non-SCAM devices. In rare cases, an old SCSI-1 device may not tolerate SCAM and may cause the computer to hang or operate erratically. If this happens, disable this option.

- **Host Adapter BIOS** – This option enables or disables the host adapter BIOS. The default setting is Enabled.

Note: Several SCSISelect options are not valid unless the host adapter BIOS is enabled.

If you are booting from a SCSI disk drive connected to the host adapter, the BIOS must be enabled. You should disable the host adapter BIOS if the peripherals on the SCSI bus (for example, CD-ROM drives) are all controlled by device drivers and do not need the BIOS.

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- **Support Removable Disks Under BIOS as Fixed Disks —** This option controls which removable-media drives are supported by the host adapter BIOS. This default setting is Boot Only. The following choices are available:

  Boot Only – Only the removable-media drive designated as the boot device is treated as a hard disk drive.

  All Disks – All removable-media drives supported by the BIOS are treated as hard disk drives.

  Disabled – No removable-media drives are treated as hard disk drives. In this situation, software drivers are needed because the drives are not controlled by the BIOS.

Caution: If a removable-media SCSI device is controlled by the host adapter BIOS, do not remove the media while the drive is on or you may lose data! If you want to be able to remove media while the drive is on, install your removable-media device driver and set this option to Disabled.

- **Extended BIOS Translation for DOS Drives >1 Gbyte** – This option determines whether extended translation is available for SCSI hard disks with capacities greater than 1 GByte. The default setting is Enabled.

Caution: If you decide to change the translation scheme, back up your disk drives first! All data is erased when you change from one translation scheme to another.

The standard translation scheme for SCSI host adapters provides a maximum accessible capacity of 1 GByte. To support disk drives larger than 1 GByte, the Ultra Wide SCSI includes an extended translation scheme. This scheme supports disk drives as large as 8 GBytes under MS_DOS with a maximum partition size of 2 GBytes.

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Extended BIOS Translation is used only with MS-DOS 5.0 or above. You do not need to enable this option if you are using another operating system such as NetWare, OS/s, Windows NT, or UNIX.

When you partition a disk larger than 1 GByte, use the MS-DOS disk utility as you normally would. Because the cylinder size increases to 8 Mbytes under extended translation, the partition size you choose must be a multiple of 8Mbytes. If you request a size that is not a multiple of 8MBytes, fdisk rounds up to the nearest whole multiple of 8MBytes.

- **Display <Ctrl-A> Message during BIOS Initialization –** This option determines whether the Press <Ctrl> <A> for SCSISelect ™ Utility message appears on your screen during system boot up. The default setting is Enabled. If this setting is disabled, you can still invoke the SCSISelect utility by pressing <Ctrl> <A> after the host adapter BIOS banner appears.

- **Multiple LUN Support** – This option determines whether booting from a SCSI device that has multiple LUNs is supported. The default setting is Disabled. Enable this option if your boot device has multiple LUNs.

- **Support for Ultra SCSI Speed** – This option determines whether the host adapter supports the fast transfer rates (13.4, 16,20.0) of Ultra SCSI devices. The default setting is Disabled.

Using SCSISelect Menus

SCSISelect menus list options you can select. To select an option, use the - and ¯ keys to move the cursor to the option, then press Enter.

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In some cases, selecting an option displays another menu. You can return to the previous menu at any time by pressing Esc. To restore the original SCSISelect default values, press F6. To toggle the display between color and monochrome modes, press F5 (this feature may not work on some kinds of monitors).

Using the SCSI Disk Utilities

To access the SCSI disk utilities, select the SCSI Disk Utilities option from the menu that appears after starting SCSISelect. Once the option is selected, SCSISelect immediately scans the SCSI bus (to determine the devices installed) and displays a list of all SCSI IDs and the devices assigned to each ID.

When you select a specific ID and device, a small menu appears, displaying the options Format Disk and Verify Disk Media.

- **Format Disk** – This utility allows you to perform a low-level format on a hard disk drive. Most SCSI disk devices are preformatted at the factory and do not need to be formatted again. The Adaptec Format Disk utility is compatible with the vast majority of SCSI disk drives.

Caution: A low-level format destroys all data on the drive. Be sure to back up your data before performing this operation. You cannot abort a low-level format once it is started.

- **Verify Disk Media** – This utility allows you to scan the media of a hard disk drive for defects. If the utility finds bad blocks on the media, it prompts you to reassign them; if you select yes, those blocks are no longer used. You can press Esc at any time to abort the utility.

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Installing Device Drivers

Some operating systems embed (included) the AIC-7880 Ultra Wide SCSI device driver as part of their installation software. These drivers work fine with your AIC-7880 Ultra Wide SCSI; however, the most recent version of the driver should be installed in order for your AIC-7880 Ultra Wide SCSI to perform at its optimum level.

- **Adaptec EZ-SCSI** – allows you to install software drivers for DOS/Windows 3.x and several additional utilities.
- **Adaptec 7800 Family Manager Set** – allows you to install software drivers for NetWare, OS/2, Windows 95, Windows NT, and UNIX. Refer to the 7800 Family Manager Set User's Guide.

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ADAPTEC EZ-SCSI UTILITY

Adaptec EZSCSI gives you what you need to use your SCSI devices most effectively with Windows 95 and Windows NT. You can also use Adaptec EZSCSI on computers running DOS, Windows 3.1x, or Windows for Workgroups 3.1x.

Quick Start Instructions

First, install SCSI devices (see the hardware documentation for details). Then follow the instructions for your operating system software in one of the following sections. We recommend that after you install Adaptec EZSCSI you run SCSITutor to learn more about the features of SCSI.

Windows 95 or Windows NT

If you want to install Windows 95 or Windows NT on a new computer system, you may not be able to access your SCSI CDROM drive at first. (Usually, you install Windows 95 and Windows NT from a CDROM disc.) To gain access to your CDROM drive, follow the DOS Quick Start instructions. Then reboot your computer and follow these instructions:

1. Install Windows 95 or Windows NT version 3.51 or above, and start it running on your computer.
2. Insert the Supporting CD-ROM to CD-ROM drive.
3. Click the Start button and select Run.
4. Type CD-ROM drive:\CD ROM\"model name"\driver\scsi \scsi lite\setup.exe. Then click OK.
5. Follow the instructions that appear on the screen.

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Troubleshooting Tips

SCSI Device Troubleshooting

Review this checklist if your newly installed SCSI disk drives, CDROM drives, and other devices do not seem to work properly:

Be sure that termination is correctly set for all devices on the SCSI bus, as described in your host adapter documentation.

Be sure there are no hardware conflicts such as devices in your computer trying to use the same interrupts (IRQs) or DMA channels.

Be sure the cables connecting the external and internal SCSI devices and the host adapter are attached securely. Also be sure the pin-1 orientation is correct for internal cables.

Be sure that each SCSI device connected to the host adapter has a unique SCSI ID.

Be sure CD-ROM drives and other SCSI devices are attached to a power source and are turned ON.

Windows 95 / Windows NT Troubleshooting

What is a miniport driver, and how do I make sure that the miniport driver is installed correctly?

Miniport drivers are new kind of 32bit protect mode device drivers used by Windows 95 and Windows NT to control host adapters and other kinds of devices. Windows 95 and Windows NT include a set of miniport drivers for various types of SCSI host adapters. The host adapter miniport driver is automatically installed and configured during Windows 95 and Windows NT installation if your host adapter is already installed. To make sure the driver is installed correctly in systems running Windows 95, open the Control Panel, double-click on System, and click the Device Manager tab. Then double-click the SCSI Controllers icon; you should see the model name of the SCSI host adapter(s) installed in your system.

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What if there is no SCSI controller icon under Device Manager, or the model name of the SCSI chipset does not appear under Device Manager:

If the SCSI controllers icon or your host adapter's model name do not appear, open Control Panel and double-click the Add New Hardware icon. Let Windows search for the host adapter by selecting Yes on the second screen of the Add New Hardware Wizard.

If Windows does not detect the host adapter, run the Add New Hardware Wizard again. This time, select No on the second screen of the wizard, then select SCSI controllers on the next screen. Select the name of your host adapter when it appears.

If the name of your SCSI chipset does not appear, you may be able to find its miniport driver o the Windows 95 CD-ROM. Follow these steps:

1. Place the Windows 95 CD-ROM in your CD-ROM drive and run the Add New Hardware wizard.
2. Select No on the second screen, and select SCSI controllers on the next screen.
3. Click on the Have Disk button, then click the browse button.
4. Look in the \drivers\storage directory of the CD-ROM and select the name of your SCSI host adapter if it appears.

What if a yellow exclamation point or a red X appears in Device Manager in front of my host adapter?

1. Open the Control Panel, double-click on System, and click the Device Manager tab.
2. Double-click the SCSI Controllers icon, select the name of the old host adapter, and click Remove.
3. Turn OFF the computer and physically remove the currently installed host adapter.
4. Install the new host adapter according to the instructions in the hardware documentation.

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5. Turn the computer ON. If the new host adapter supports Plug and Play, Windows will install and configure it automatically. Otherwise, run Add New Hardware to make sure the new driver is loaded.

If I am running under Windows 95, do I need lines for the Adaptec real mode ASPI drivers and mscdex in my config.sys and autoexec.bat files?

Usually, you do not need to use these real mode ASPI drivers, because the new Windows miniport drivers support most SCSI host adapters and SCSI devices. However, you need to load the drivers (including mscdex, if you have a CD-ROM drive) if any of the following is true:

- You are running in MSDOS mode.
- You are using a scanner or another SCSI device with config.sys - or autoexec.bat- based drivers, such as HP's sjiix.sys.
- You have an older model SCSI-1 CD-ROM drive that Windows 95 does not support.
- You are using a CD-Recorder drive (however, some newer models of CD-Recorder drives can use the embedded Windows miniport drivers).

To install the Adaptec EZSCSI DOS drivers, click the Start button and select Restart the computer in MS-DOS mode. When the DOS prompt appears, follow the Quick Start instructions for DOS.

My CD-ROM drive doesn't work properly under Windows 95.

Some older models of SCSI CD-ROM drives are not compatible with the embedded Windows 95 CD-ROM driver. You can add support for the CD-ROM drive by doing the following:

1. Click the Start button and select Restart the computer in MS-DOS mode.
2. When the DOS prompt appears, follow the Quick Start instructions for DOS.

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3. When you are finished running Adaptec EZSCSI for DOS, find the file named cdtsd.vxd in the windows\system\iosubsys directory and rename it cdtsd.sav.

My CD-ROM drive shows up as more than one icon under My Computer.

The mapping between mscdex, which runs in real mode, and the Windows95 CDROM driver does not match. You can correct this in one of two ways:

- Comment out the line that loads mscdex.exe in the autoexec.bat file.
- Change the /L switch on the line that loads mscdex.exe in the autoexec.bat file so it assigns the CD-ROM drive the next highest logical drive letter after the hard disk drives.

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Information for DOS/Windows 3.1x Users

The following information may be useful if you install Adaptec EZSCSI on a computer running DOS, Windows 3.1x, or Windows for Workgroups 3.1x.

Note: The Windows 95/Windows NT Troubleshooting section describes a few situations when you may need to use the DOS/Windows 3.1x drivers and ASPI managers under Windows 95 or Windows NT.

DOS and Windows 3.1x Device Drivers

Device drivers are software programs that enable your computer to communicate with SCSI devices such as hard disk drivers, CD-ROM drives, and scanners. Each kind of device requires a different device driver. Adaptec EZSCSI includes several DOS/Windows 3.1x device drivers that are copied to your hard disk during installation. Adaptec EZSCSI adds command lines to your config.sys and autoexec.bat files to load these device drivers if it finds these kinds of devices on your computer.

To learn more about the Adaptec EZSCSI device drivers, including their command line option information, see the online Adaptec EZSCSI Online Reference, a Windows Help application.

DOS and Windows 3.1x ASPI Managers

ASPI (Advanced SCSI Programming Interface) managers are software programs that enable the SCSI device drivers, your host adapter, and your SCSI devices to communicate with each other. ASPI managers are written for a specific operating system, such as DOS, and a specific family of Adaptec host adapters.

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Adaptec EZSCSI includes several ASPI managers for DOS/ Windows 3.1x. When you install Adaptec EZSCSI on these operating systems, it detects what kind of host adapter is installed in your computer and automatically configures your system with the correct ASPI manager. To learn more about these ASPI managers, including their command line option information, see the Adaptec EZSCSI Online Reference, a Windows Help application.

DOS Formatting Utilities

Adaptec EZSCSI includes several DOS-based formatting utilities;

Low-level Formatter (scsifmt)

Use the DOS-based scsifmt utility for low-level formatting of SCSI hard disk drives, removable media, Floptical® drives. You can also use it to scan a disk device for surface defects before you store data on it.

Run scsifmt from the DOS prompt, not from the Windows MSDOS prompt. Before you run it, be sure the disk devices you want to format are connected to the host adapter and that they are powered. Then follow these steps:

1. Change to the directory where scsifmt.exe is located (usually c:\scsi), type scsifmt at the DOS prompt, and press Enter.

NOTE: If you are formatting a SCSI disk device that supports more than one LUN (for example, Iomega's Bernoulli dual multidrive) type scsifmt/L at the command line.

2. When the first screen appears, read it and press Enter to continue. (Press F1 at any time to view Help). Information about your SCSI disk devices appears on the screen.
3. Use the arrow keys to move the highlight bar to a disk device you want to format or verify, then press Enter.

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4. When the next screen appears, select either Format or Verify (to verify that the disk is free of surface defects), then press Enter.

WARNING: Back up important data before you format the disk device! A low-level format erases all data from the disk.

5. If you select Format, confirm that you want to format the disk, then wait while the disk device is formatted. This may take a long time if the disk is large.
   If you select Verify, you can press Esc at any time to stop the verification process. (This does not damage the disk.) If the utility finds bad blocks on the disk, it displays information about them. You can reassign the bad block(s) to prevent data from being stored there.
6. Repeat steps 3,4, and 5, as needed, to format or verify other disk devices. When you are finished, press Esc to exit.

Formatter and Partitioner (afdisk)

Use the DOS-based afdisk utility to partition and format SCSI hard disk drives, Floptical® drives, and magneto-optical dries. You can also use afdisk to remove DOS and non-DOS partitions from a disk drive and to format removable media in standard hard disk format, OS/2 floppy format, or DOS V (Japanese) format.

NOTE: Use afdisk only if the disk device is not controlled by the host adapter BIOS – that is, if the host adapter does not have BIOS or if its BIOS is not enables. If the disk device is controlled by the host adapter BIOS, use the DOS fdisk utility to partition and format the disk device. (See the MSDOS documentation.).

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Run afdisk from the DOS prompt only, not from the Windows MSDOS prompt. Before you run it, be sure the disk devices you want to format and partition are connected to the host adapter and that they are powered. Then follow these steps:

1. Change to the directory where afdisk.exe is located (usually c:\scsi), type afdisk at the DOS prompt, and press Enter. Information about your SCSI disk devices appears on the screen. (The number that appears after Target is the device's SCSI ID).
2. Use the arrow keys to move the highlight bar to the disk device you want to partition, then press Enter.

- If the selected disk device is controlled by the host adapter BIOS, you can view information about it but you cannot partition it with afdisk (Use the DOS fdisk and format utilities.)
- If the selected disk device is unpartitioned, you must partition it before you can format it. To do this, follow the instructions on the screen. (Press F1 to see an explanation of the partitioning options.)
  Information about the selected disk device appears in the lower left of the screen. Disks smaller than 1Gbyte have 64 heads, 32 sectors per track, and cylinders equal to the number of MBytes of available capacity. Disks larger than 1Gbyte have 255 heads, 63 sectors per track, and one cylinder per 8MBytes of available capacity.

3. To create a new partition on the disk device, press Ins. The "Create a DOS Partition" window appears in the lower right of the screen and suggests that you create one partition on the disk device, equal to its entire capacity. If this is what you want to do, skip to step 5.

4. To change the size of the partition, use the arrow keys to select Start Cylinder and End Cylinder, and type in the numbers you want. Partitions up to 2GBytes are supported.

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5. When the number of cylinders is what you want, press Esc. When the confirmation prompt appears, select Yes and press Enter to create the partition. To create more partitions on the same disk device, repeat steps 3,4, and 5. As you create partitions on the disk., they are added to the window at the upper right of the screen.
6. Press Esc to return to the "Select SCSI Device to Partition" window. If you want to partition a different disk device, select the device from the list and repeat the earlier steps.
7. To quit afdisk, press Esc and select Yes to confirm that you want to quit.

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A

Programming the Watchdog Timer

The SBC-596/599 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial standalone, or unmanned, environments.

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Programming the Watchdog Timer

In order to program the watchdog timer, you must write a program which writes I/O port address 443 (hex). The output data is a value of time interval. The value range is from 01(hex) to 3F(hex), and the related time interval is 1 sec. to 63 sec.

Data	Time Interval
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
	.
	.
	.
3F	63 sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should read I/O port 043 (hex).

The following example shows how you might program the watchdog timer in BASIC:

```
10    REM Watchdog timer example program
20    OUT &H443, data  REM Start and restart the
      watchdog
30    GOSUB 1000  REM Your application task #1
40    OUT &H443, data  REM Reset the timer
50    GOSUB 2000  REM Your application task #2
60    OUT &H443, data  REM Reset the timer
70    X=INP (&H043)  REM Disable the watchdog
timer
80    END

1000  REM  Subroutine #1, you application task
      .
      .
      .
1070  RETURN
2000  REM  Subroutine #2, you application task
      .
      .
      .
2090  RETURN
```


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B

Pin Assignments

This appendix contains information of a detailed or specialized nature. It includes:

- Speaker connector
- HDD LED connector
- Reset connector
- Power LED/keyboard lock connector
- Fan power connector
- Wide SCSI connector
- SCSI connector
- IDE hard drive connectors
- Floppy connector
- Flat panel connector
- EXT keyboard connector
- COM port connectors
- Printer port connector
- IR connector
- CRT connector
- USB connectors
- Keyboard and PS/2 mouse connector
- Ethernet connector

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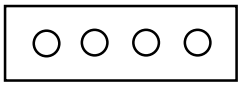
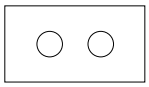
Speaker connector (CN1)



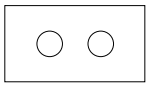
SBC-596/599 Speaker connector (CN1)	
Pin	**Signal**
1	VCC
2	NC
3	BZ
4	SP

HDD LED connector (CN2)



SBC-596/599 HDD LED connector (CN2)	
Pin	**Signal**
1	GND
2	+

Reset connector (CN3)



SBC-596/599 Reset connector (CN3)	
Pin	**Signal**
1	GND
2	+

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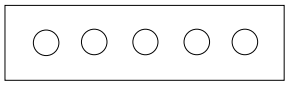
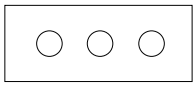
Power LED/keyboard lock connector (CN4)



SBC-596/599 Keyboard lock connector (CN4)	
Pin	**Signal**
1	PWLED
2	NC
3	GND
4	KLOCK
5	GND

Fan power connector (CN5)



SBC-596/599 Fan power connector (CN5)	
Pin	**Signal**
1	N/C
2	GND
3	+12 V

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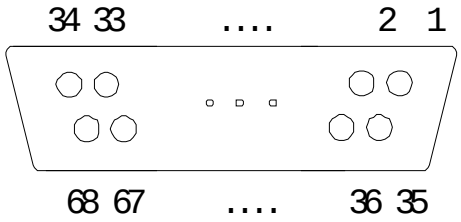
Wide SCSI connector (CN6)



SBC-599 Wide SCSI connector (CN6)

Pin	Function	Pin	Function
1	GND	2	GND
3	GND	4	GND
5	GND	6	GND
7	GND	8	GND
9	GND	10	GND
11	GND	12	GND
13	GND	14	GND
15	GND	16	GND
17	TRMPWR	18	TRMPWR
19	NC	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	GND
27	GND	28	GND
29	GND	30	GND
31	GND	32	GND
33	GND	34	GND
35	SCD12	36	SCD13
37	SCD14	38	SCD15
39	SCDPH	40	SCD0
41	SCD1	42	SCD2
43	SCD3	44	SCD4
45	SCD5	46	SCD6

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SBC-599 Wide SCSI connector (CN6)			
Pin	**Function**	**Pin**	**Function**
47	SCD7	48	SCDPL
49	GND	50	GND
51	TRMPWR	52	TRMPWR
53	NC	54	GND
55	SATIN-	56	GND
57	SBSY-	58	SACK-
59	SRST-	60	SMSG-
61	SSEL-	62	SCD-
63	SREQ-	64	SIO-
65	SCD8	66	SCD9
67	SCD10	68	SCD11

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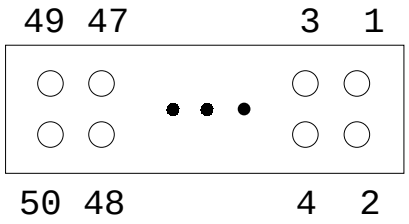
SCSI connector (CN7)



SBC-599 SCSI connector (CN7)

Pin	Function	Pin	Function
1	GND	2	SCD0
3	GND	4	SCD1
5	GND	6	SCD2
7	GND	8	SCD3
9	GND	10	SCD4
11	GND	12	SCD5
13	GND	14	SCD6
15	GND	16	SCD7
17	GND	18	SCDPL
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	TRMPWR
27	GND	28	GND
29	GND	30	GND
31	GND	32	SATIN-
33	GND	34	GND
35	GND	36	SBSY-
37	GND	38	SACK-
39	GND	40	SRST-
41	GND	42	SMSG-
43	GND	44	SSEL-
45	GND	46	SCD-
47	GND	48	SREQ-
49	GND	50	SIO-

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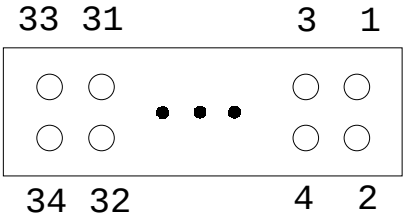
IDE hard drive connectors (CN8, CN9)



SBC-596/599 IDE hard drive connector (CN8, CN9)

Pin	Signal	Pin	Signal
1	IDE RESET*	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	HDD 1	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	HD READY	28	N/C
29	HDACK 0*	30	GND
31	IRQ15/IRQ14**	32	N/C
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0*	38	HARD DISK SELECT 1*
39	IDE ACTIVE*	40	GND

* Low active

**CN8 IRQ14
CN9 IRQ15

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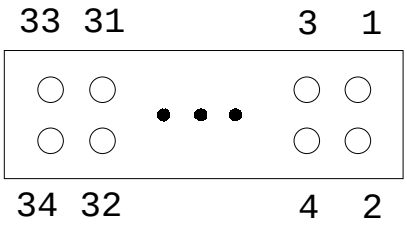
Floppy connector (CN10)



SBC-596/599 Floppy connector (CN10)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	DENSITY SELECT*
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	INDEX*
9	GND	10	MOTOR 0*
11	GND	12	DRIVE SELECT 1*
13	GND	14	DRIVE SELECT 0*
15	GND	16	MOTOR 1*
17	GND	18	DIRECTION*
19	GND	20	STEP*
21	GND	22	WRITE DATA*
23	GND	24	WRITE GATE*
25	GND	26	TRACK 0*
27	GND	28	WRITE PROTECT*
29	GND	30	READ DATA*
31	GND	32	HEAD SELECT*
33	GND	34	DISK CHANGE*

* Low active

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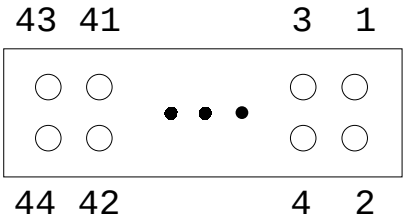
Flat panel connector (CN11)



SBC-599 Flat panel connector (CN11)			
Pin	**Function**	**Pin**	**Function**
1	+12 V	2	+12 V
3	GND	4	GND
5	5V/3.3V	6	5V/3.3V
7	ENAVEE*	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	SHFCLK/ASHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL*
41	KB_DT	42	KB_CK
43	N/C**	44	5V/3.3V

* Low active

** If R60 is connected, this pin is ENAVDD

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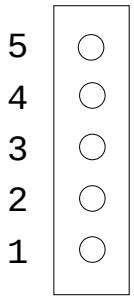
External keyboard connector (CN12)



SBC-596/599 External keyboard connector (CN12)	
Pin	**Signal**
1	KB_CK
2	KB_DT
3	NC
4	GND
5	V_{CC}

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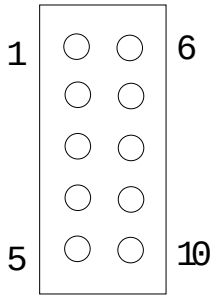
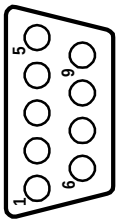
COM port connectors (CN13: COM2, CN17: COM1)





SBC-596/599 COM port connectors (CN13, CN17)

Pin	Signal
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	NC

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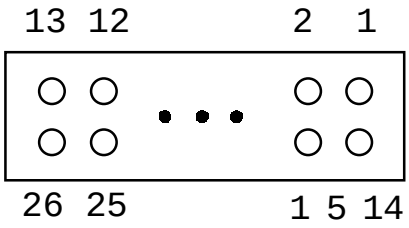
Printer port connector (CN14)



SBC-596/599 printer port connector (CN14)

Pin	Signal	Pin	Signal
1	STROBE*	14	AUTOFD*
2	D0	15	ERR
3	D1	16	INIT*
4	D2	17	SLCTINI*
5	D3	18	GND
6	D4	19	GND
7	D5	20	GND
8	D6	21	GND
9	D7	22	GND
10	ACK*	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	N/C

* Low active

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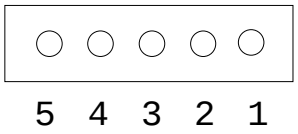
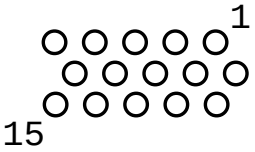
IR connector (CN15)



SBC-596/599 IR connector (CN15)

Pin	Signal
1	V_{CC}
2	NC
3	IR IN
4	GND
5	IR OUT

CRT connector (CN16)



SBC-599 CRT display connector (CN16)

Pin	Signal	Pin	Signal
1	RED	9	N/C
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	N/C
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	N/C
8	GND		

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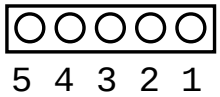
USB connectors (CN18, CN20)



SBC-596/599 USB connectors (CN18, CN20)	
Pin	**Signal**
1	+5 V
2	UV-
3	UV+
4	GND
5	N/C

Keyboard and PS/2 mouse connector (CN19)

SBC-596/599 Keyboard and mouse connector (CN19)	
Pin	**Signal**
1	KB DT
2	MS_DT
3	GND
4	VCC
5	KB_CK
6	MS_CK

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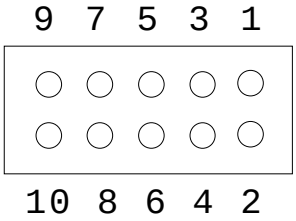
Ethernet 10BASE-T connector (UPT1)



SBC-599 Ethernet 10BASE-T connector (UPT1)	
Pin	**Signal**
1	XMT+
2	XMT-
3	RCV+
4	N/C
5	N/C
6	RCV-
7	N/C
8	N/C
9	N/C
10	N/C

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C

IRQ Default Settings

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IRQ Default Settings

IRQ15	IDE 2
IRQ14	IDE 1
IRQ12	(PS/2 mouse)
IRQ11	USB/(SCSI)
IRQ10	(LAN)
IRQ9	
IRQ7	LPT1
IRQ6	Floppy disk
IRQ5	LPT 2
IRQ4	COM1
IRQ3	COM2

* IRQ 0, 1, 2, 8, 13 have been reserved for the system.

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